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AGILE COMBAT SUPPORT DOCTRINE AND LOGISTICS OFFICER TRAINING: DO WE NEED AN INTEGRATED LOGISTICS SCHOOL FOR THE EXPEDITIONARY AIR FORCE?

by

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Preface

I first became interested in the need for integrated logistics officer training during my assignment to Headquarters 7th Air Force, Republic of Korea (ROK), as the deputy director of transportation. I was appointed to the Commander's Contingency Operations Bare Base (COBB) assessment team as the logistics representative evaluating the capability of inactive air bases to support the reception, bed-down, and sustainment of deployed Air Force units during contingency operations. I assessed the full spectrum of support functions ranging from contracting, supply, and services to aircraft maintenance, logistics plans, and transportation. Trained exclusively in transportation my learning curve proved quite steep as I began to understand and evaluate the critical contributions of each logistics discipline in supporting combat operations. My exposure to all the logistics requirements for force employment and basic understanding of the synergistic relationships between logistics functions served me well as the logistics representative to the Director of Mobility Forces (DIRMOBFOR) during the TEAM SPIRIT 93 joint and combined forces exercise.

My concerns about the need for integrated logistics officer training grew after attending the Advanced Logistics Officer Course (ALOC) in 1997. I did not believe a two-week orientation on the basic functions of the various logistics disciplines provided the depth of knowledge necessary to meet the qualifications warranting a 21LXX "Logistics Officer" Air Force Specialty Code (AFSC) designation. After completing the Air Force's capstone logistics officer training program, I did not have sufficient understanding of those critical systems in each logistics

discipline needed to discharge the cross-functional duties of a senior logistics officer, i.e., logistics group commander. Nor did I feel I had requisite knowledge of the integrated relationships and processes across the spectrum of logistics disciplines, as well as the in-depth expertise necessary to skillfully leverage those systems and maximize logistics support to the operational mission.

An occurrence during my tenure as a Transportation Squadron Commander reinforced my concerns about the need for interdisciplinary logistics officer training. I received a tasking to deploy a newly promoted captain to Bosnia to fill a provisional logistics squadron commander billet. I called the MAJCOM and asked why they were deploying an officer with only three months of career field experience (she had recently cross-trained from the air control specialty) to a critical forward location. I was both shocked and amazed to learn that my cross-trainee was the best available company grade officer in the command! At that moment I realized the Air Force must find a better way to identify qualified officers to fill critical contingency requirements. I also recognized that we were doing a great disservice to our officers by sending them to perform integrated logistics duties without providing them cross-functional logistics training, or in this case, even initial training in their primary discipline. I knew there must be a way to better prepare logisticians for integrated duties in deployed assignments and I suspected this lack of training would impact mission support in Bosnia.

Listening to this captain's deployed experiences confirmed my suspicions. Similar to my COBB assessments in Korea, her responsibilities as the provisional logistics commander encompassed the full spectrum of logistics tasks from transportation to supply and contracting. She learned all of these employed logistics functions on the job in an intense joint service environment. Although solid leadership and management skills compensated for the lack of

expertise to some extent, the diverse logistics requirements were not mastered until a few weeks prior to departure. Similar reports from commanders who deployed logistics officers to Operation Allied Force corroborated her anecdotal experiences: The Air Force is sending young logistics officers to contingency locations to perform cross-functional logistics duties without the training required to do their jobs. Although these officers did what it took to prevent mission degradation, the time needed to master all the integrated logistics processes hindered their leadership effectiveness and reduced their ability to maximize and leverage logistics capabilities. Numerous conversations with fellow logisticians attending ACSC provided further evidence of a deficiency in logistics officer training. Classmates' first-hand accounts of learning on the job while deployed to an AOR substantiated the requirement for a cross-functional logistics course. I decided to concentrate my research on this problem and investigate the need for cross-functional logistics officer employment training in the Air Force.

First and foremost, I thank God for blessing me with the opportunity to attend Air Command and Staff College and for providing me with discernment to see things that should be changed, the courage to change the things I can change, and the vision to pave the road leading to change. I'm indebted to Major Vicki Rast for her insightful guidance, timely encouragement, empathetic patience, and sage advice during this research. Special thanks also go to my ACSC logistics colleagues and logisticians in the field who shared their experiences and provided data for this research. My deepest appreciation and gratitude go to my loving wife Justine for always being my best friend and biggest fan - without your understanding, sacrifice, and assistance I could not have completed this research. Finally to my son little Jacob James Hall, you are my love and my life, you are my inspiration. I prayed for a son and the Lord answered my prayers!

Abstract

The Air Force *Global Engagement* vision and Expeditionary Air Force (EAF) strategy focus on the *Agile Combat Support* (ACS) core competency as the foundation for the rapid projection of light, lean, and lethal aerospace power forces. This research examines the evolution of Air Force logistics doctrine, the linkage between doctrine, strategy, tactics, and training programs, and the corresponding application of logistics employment and sustainment functions in a deployed environment. To do so, this research analyzes the USAF's diverse logistics officer training programs to determine if there is a deficiency in interdisciplinary logistics employment and sustainment training. It ascertains if that training shortfall reveals a gap between Air Force logistics doctrine and EAF combat strategy. It also investigates the Air Force transition to the Aerospace Expeditionary Force (AEF) operational employment concept as the force projection mechanism for the EAF and the reliance on ACS has the primary enabler to identify specific areas where the absence of integrated logistics training impacts or potentially degrades mission success. After these factors have been adequately analyzed and interpreted, this research highlights the Army logistics officer-training philosophy as a benchmark to gauge the effectiveness of integrated logistics training on expeditionary strategy and logistics officer professional career development. The origins, course development, and utility of the USAF Weapons School are presented as an historical reference for creating congruency between doctrine, tactics, and training. The Red Flag training exercises are offered as a model for operational requirements driven training and as an example of the opportunity to integrate

logistics employment training in existing combat exercises. The Weapons School is recommended as a model for the development of an integrated agile logistics course to develop multi-functional tactical logistics expertise. An integrated logistics school is recommended as a means to bridge the gap between logistics officer training and AEF operational employment mechanisms. The proposed agile logistics school provides an venue to strategically align logistics officer training with EAF strategy and ACS doctrine thereby establishing congruency with the Air Force *Global Engagement* vision and leveraging logistics as a force multiplier enhancing the effective employment and sustainment of aerospace forces.

Part 1

Integrated Logistics Officer Training — Do We Have It, Do We Need It, Can We Find It, and How Do We Get It?

Training is not a luxury; it's a necessity!

— Colonel Gary Buis, Air Warrior Commander, 1995

Training transforms an organizations valuable human resources into a motivated and educated workforce prepared to perform its mission. Training is connected directly to doctrine, for when stripped away from all its fanciful language, doctrine is quite simply what we believe, and, therefore, what we should teach those who follow.[1] This research investigates the link between military doctrine and training to demonstrate the significance of transforming organizational principles, concepts, and beliefs into the corresponding practical and tangible technical training that must equip personnel with the knowledge and expertise to implement strategy and accomplish military objectives.

Methodology

This research examines the historical development of Air Force logistics doctrine and explores the correlation between doctrine and the logistics officer training programs established to support doctrinal concepts. This study evaluates the relationships between the Air Force *Global Engagement* vision, Agile Combat Support doctrinal core competency, Expeditionary Air Force strategy, and logistics officer training to determine if there is congruency between the

vision, doctrine, strategy, and current logistics training programs required for expeditionary airpower projection. Current Air Force logistics officer education and training is analyzed to discover if there is an absence of integrated logistics employment and sustainment training in the functional courses, supplemental classes, and advanced education programs. ACS and AEF operational employment procedures are investigated to ascertain if the current Air Force logistics officer training philosophy is strategically aligned with the operational tactics and training required to employ and sustain combat capability.

Data Collection

A literature review of logistics journals, published professional military papers, and current training catalogs provides topical background information from the existing body of knowledge. Personal interviews with doctrine subject matter experts (SMEs), Logistics Group Commanders, Wing Commanders, and senior Air Force leaders (colonel and above) provide insight on their perspectives of deployed logistics officer responsibilities, the impact of current training on combat capability, and the need for integrated logistics officer training. A Survey (see Appendix D) administered to logistics officers representing a cross-section of expertise and experience in Air Force logistics career fields including aircraft maintenance, logistics plans, transportation, supply, and contracting is the approach used for collecting data on the adequacy of current logistics training and the development of cross-functional expertise within the profession. Surveying logisticians possessing deployed contingency experience determines if those officers believe they were trained properly and whether they felt prepared for their duties in deployed locations. Survey data (see Appendix E) are analyzed using Spearman Rank Order Coefficient statistical analysis via SPSS 8.0 (see Appendix F). Interview informant's perceptions and perspectives are combined with qualitative coding is to develop logistics officer training

attitudinal categories and identify themes that respondents perceive as significant. The quantitative analysis highlights relationships that impact logistics officer training, duty requirements, and preparedness. Informants were selected from a variety of logistics officers I have interacted with throughout my 14-year career, fellow ACSC students, and referrals. This "snow ball" selection method simplified contacting informants, survey administration, data collection, and data analysis. Unfortunately, due to the method of respondent selection the findings of this research can not be generalized to the larger Air Force logistics officer population.

Benchmarking Officer Training: U.S. Army's Approach, USAF Weapons School & Red Flag Exercises

The U.S. Army Training and Doctrine Command (TRADOC) is reviewed to present a benchmark for organizing and prioritizing the progression of doctrine to training in a military institutions command structure and training philosophy. The Combined Logistics Captains Career Course (CLCC) is evaluated to provide a benchmark for developing integrated training to meet the logistical challenges of an expeditionary force projection strategy. The establishment and evolution of the Air Force Fighter Weapons School and Red Flag exercises are offered as historical case studies to analyze the Air Force's response to a similar disparity between combat doctrine and training.

Summary

Following the topic introduction and framing of the research discussion in Part 1, Part 2 provides historical background on the progression of logistics doctrine to ACS. Part 3 presents the findings of the literature review and the significant correlation's between survey questions. Part 4 summarizes the research, presents conclusions, provides recommendations, and offers

suggestions for additional research in areas requiring further study. The survey, raw data, and statistical analysis are presented in Appendix D, E, and F respectively. Let us begin with the development of logistics doctrine in Part 2.

Notes

[1] Major James D. Gorby USAF, "Air Force Logistics Doctrine," *Air Force Journal of Logistics* IV, no. 1 (Winter 1980): 24.

Part 2

In The Beginning...There Was Doctrine

You must teach what is in accord with sound doctrine.

— Titus 2:1

Joint Publication 1-02, *Dictionary of Military and Associated Terms,* defines doctrine as, "the fundamental principles by which the military forces or elements guide their actions."[1] Air Force Basic Doctrine (AFDD 1) defines doctrine as, "A statement of officially sanctioned beliefs and principles...what we have come to understand based on our experience...fundamental principles that guide actions in support of objectives."[2] Distilled to the fundamental essence, *Air Force Basic doctrine is how we fight.* Doctrine is the foundation of military capability, it provides the framework for organizing, training, and equipping forces to defend our nation and support our national objectives. The genesis of doctrine lies in the roots of history, for it is from our past experiences and observations that we devise and discern the best practices and most effective means to accomplish objectives.

The synthesis of historical lessons with our expectations and current environmental factors leads to the development of theories; that which an epistemic community believes and professes to be true based on empirical validation through repetition.[3] The transformation of historical truths and theoretical concepts into codified principles about what we believe and profess becomes sanctioned as doctrine. Doctrine is a growing, evolving, and maturing process that requires a fusion of intellectual vision and practical experience to remain relevant and provide

direction for strategic development. The Caffrey History-to-Strategy model shown in figure 1 graphically depicts the doctrinal development process.

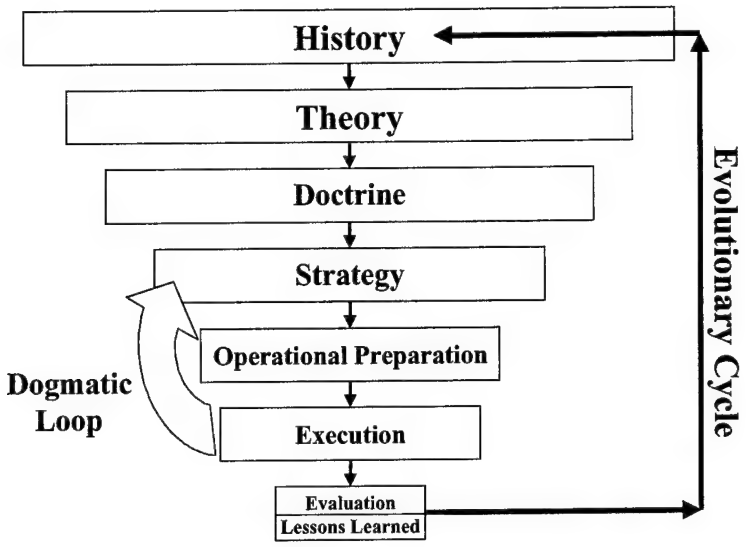

Figure 1. Caffrey History-to-Strategy Model

The model depicts the cyclical relationship between experience, theory, doctrine, and strategy; it infers learning and an evolutionary approach to developing strategy. Learning stems from the evaluation of strategy execution in the form of lessons learned from experience. These lessons learned enhance historical knowledge and can be interpreted using the historical record of related phenomena to support new theoretical development. This process in-turn leads to doctrinal evolution. Professor Matt Caffrey, describes the learning process as,

> The lessons learned from experience drive changes in focus areas of importance and training priorities. Doctrinal development is an iterative process, a continuous loop that identifies the salient concepts strategist should build upon and the procedures tacticians should derive and practice in preparation for execution. If doctrine is not driving training then strategy is stagnant and self-substantiated dogma prevails.[4]

The Creation of Air Force Logistics Doctrine

The earth was without form and void, and darkness was upon the face of the deep.

— Genesis 1:2

The need for logistics doctrine and logistics officers trained to employ those principles supporting airpower operations is not a new requirement driven by shrinking budgets, Air Force reorganization, downsizing, or the recent shift to an expeditionary force projection strategy. In fact, the search for operational Air Force logistics doctrine and training to develop expert logisticians began before the establishment of an independent Air Force.[5] The Army Air Corp's initial attempt at Air Force logistics doctrine was the distribution of a general logistics-planning document entitled the Army Air Corps "Logistics Manual."[6] From that inauspicious start the logistics support element of airpower continued to develop in a reactive, piecemeal fashion based on technical orders and field experience. The difficulty in attempting to apply primarily Air Corps aircraft maintenance practices to the diverse Air Force logistics functions created problems in communicating roles, missions, responsibilities, and combat support requirements to the operators. Leaders in the Air Force recognized this absence of comprehensive logistics doctrine and attempted to fill the void by establishing the Advanced Logistics Course in 1955 at the Air Force Institute of Technology (AFIT) *for the main purpose of training logisticians and developing logistics doctrine and philosophy.*[7] The course evolved into the AFIT "School of Systems and Logistics" and in 1967 a team of cross-functional logistics students took on the task of developing foundational logistics doctrine as their thesis research project. Their AFIT thesis led to the formulation and 1968 publication of AFM 440-2, *Air Force Logistics Doctrine.*[8]

As time progressed and missions expanded, the Air Force made further attempts to revise and update logistics doctrine in (a) the 1979 version of Air Force Manual 1-1, *Air Force Basic*

Doctrine, (b) the 1985 AFM 2-15, *Combat Support Doctrine,* and (c) the April 1987 publication of AFM 1-10, *Combat Support Doctrine*[9]. AFM 1-10 stirred heated debate in the logistics community due to the exclusion of the word "logistics" in the title of the logistics source document. This debate proved more than mere semantics as AFM 1-10 encompassed a broader range of logistics functions then before including non-traditional disciplines such as security, services, and civil engineering which was more consistent with the joint concept of combat support. Apparently, the Air Force civil engineering and services communities did not consider themselves logisticians so the title served as a "political" compromise to push the document through to publication and get something out to the field after almost 10 years.[10] The significance of the debate over combat support cannot be overlooked: it reflects an attitude and perception of logistics as a "support" function or precursor to employing combat power rather than an integrated operational art element available for a commander to influence and leverage combat capability. This separatist notion of logistics as an illegitimate and insignificant by-stander in the art of war is epitomized in the German general staff's quote, "logistics is a necessary evil…most often more evil than necessary." That attitude and disdain for logistics requirements would lead to the demise of the German Army through the extended logistics lines of WWII campaigns in Russia and North Africa. Given the historical requirements of sustaining deployed forces and current realties of AEF employment practices, messing and housing deployed forces, have been and will continue to be, integral elements of expeditionary logistics. The summation of the Air Force journey towards logistics doctrine to date culminates with the development of ACS as a core competency of the *Global Engagement* vision for aerospace power projection. However, the troublesome obstacle of linking doctrine to strategy and training to effectively employ aerospace forces lingers on.

The Development of Agile Combat Support Doctrine

What Has Been Done Will be Done Again; There is Nothing New Under the Sun.

— Ecclesiastes 1:9

Similar to the AFIT inter-disciplinary doctrinal development team, although at a much higher level, an integrated doctrine working group representing a cross-section of Air Force logisticians from the Air Staff, Major Commands (MAJCOMs), and the Air and Space Doctrine Center developed the following ACS definition:

> *Agile Combat Support is the cornerstone of Global Engagement and the foundation for the other Air Force core competencies.* Agile Combat Support creates, sustains, and protects all Air and Space capabilities to accomplish mission objectives across the spectrum of military operations. Agile Combat Support provides the capabilities that distinguish Air and Space power—speed, flexibility, and global perspective[11] (emphasis added).

Following the precedence established in AFM 1-10, the ACS definition expands the traditional scope of logistics consisting of maintenance, supply, transportation, and logistics plans and includes services, civil engineering, and force protection.[12] By definition, ACS has attained equal billing with combat operations as a foundational tenet of aerospace power! What military historians, strategists, and tacticians from antiquity through the Gulf War have recognized has been codified in our Air Force doctrine: Logistics is a core military operational art element critical to the successful employment and execution of combat power. As Martin Van Creveld states in *Supplying War*, "Although logistics is admittedly an unexciting aspect of war…logistics make up as much as nine tenths of the business of war."[13] During a 1996 presentation at the Smithsonian Institute, General Ronald Fogleman, Air Force Chief of Staff, emphasized the significance of ACS doctrine to airpower,

> ACS is a vital part of what the Air Force provides the nation, this core competency was adopted to make air forces more expeditionary in nature, so we

> will continue to be the instrument of choice when national leaders want to engage quickly and decisively anywhere on the globe.[14]

Having garnered the sanctioned endorsement of the CASF, it would appear that logistics has reached the pinnacle of operational legitimacy in ACS doctrine. Finally we have a core competency that recognizes the criticality of logistics and is focused on the principles of warfighting doctrine not peacetime organization. Anchored in sound doctrine we can proceed with teaching the integrated functions that produce combat efficiency. Ah, but there's a rub, unfortunately we still have the troublesome requirement to align training with ACS doctrine and insure the concepts we profess as vital to airpower are in fact transferred down in the form of specific tactics, techniques, and procedures (TTPs) developed to effectively implement that doctrine. Historically aligning military doctrine with strategy and training philosophies has been difficult, but none the less important, to ensure the successful application of strategy to achieve objectives. In 1915, Commodore Dudley W. Knox described the doctrine to training dilemma in the following manner:

> To reach the ultimate goal of war efficiency, we must begin with principles, conceptions, and major doctrines, before we can safely determine minor doctrines, methods, and rules. We must build from the foundation upwards and not from the roof downwards.... *The service which neglects so essential a part of war command as the indoctrination [read training] of is commissioned personnel is destined to fail in its ambitions for great achievement*[15] (emphasis added).

Our aspirations are indeed lofty in establishing ACS as the cornerstone of *Global Engagement*. Those lofty ambitions rely on technological systems capabilities and rest squarely on the shoulders of junior logisticians who must employ ACS functions in a deployed location and sustain combat airpower operations. The path to creating congruency within our doctrine, strategy, and training is self-contained in the principles of doctrinal congruency and strategic alignment. The road to recovery is paved by adherence to doctrinal priorities in our training methods. While there may be many differences about what doctrine should include and how it

should be implemented, ACS clearly provides a comprehensive foundation for educating and training Air Force logisticians for war.[16]

Part 3 introduces salient data on training needed to achieve the objectives contained in ACS doctrine and necessary to perform the logistics functions mandated in Air Force Doctrine Document 2, *Organization and Employment of Aerospace Power,* Commander Air Forces (COMAFFOR), Director of Logistics (A-4) responsibilities. An evaluation of the congruency in Japanese WWII doctrine, strategy, tactics, and training philosophy for gaining air superiority in the Pacific provides compelling evidence of the consequences in misaligning strategy, tactics, and training while employing combat aerospace forces to achieve military national objectives.

Notes

[1] Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, September 1997.

[2] *ibid.*

[3] Matt Caffrey, US Air Force Air Command and Staff College, Maxwell AFB, Al., interview by author, 1 Mar 2000.

[4] *ibid.*

[5] Lieutenant Colonel Rodney L. Boatright USAF, "Combat Support Doctrine: Where We've Been, Where We Are, and Where We Should Be Going," *Air Force Journal of Logistics* XVI, no. 3 (Summer 1992): 14-17.

[6] *ibid.*

[7] *ibid.*

[8] *ibid.*

[9] ibid.

[10] Jerome C. Peppers, "Combat Support Doctrine," *Air Force Journal of Logistics* XVI, no. 4 (Fall 1992): 30.

[11] Lieutenant General William P. Hallin USAF, "Agile Combat Support---The New Paradigm," *Air Force Journal of Logistics* XXI, no. 3&4 (Fall 1994): 1-3.

[12] *ibid.*

[13] Martin Van Creveld, *Supplying War* (New York, N.Y.: Cambridge University Press 1995), 231.

[14] General *Ronald* R. Fogleman, "Air Force Global Engagement Vision and Core Competencies," address at the Smithsonian Institute, Washington, 21 November 1996, n.p.; on-line Internet, 3 March 2000, available from http://www.af.mil/news/speechs/current/Global Engagement.html.

[15] AFJL Special Section: "Combat Support Doctrine," *Air Force Journal of Logistics* X, no. 1 (Winter 1986).

[16] Boatright, 16.

Part 3

Integrated Logistics Officer Training — Do We Have It?

Tomorrow's logistician must have a much better, more complete understanding of the entire flow of our logistics process. No longer can we afford to build discrete specialists in maintenance, or munitions, or supply, or transportation.

— Lieutenant General Leo Marquez
Air Force Deputy Chief of Staff for Logistics, 1985

Although spoken 15 years ago, the truth of the words above resonates today for it echoes a fact military historians have recognized throughout the annuals of warfare: The mobility and versatility of combat forces is dependant on the integration of operational logistics functions tailored for combat support. Historically logisticians have been charged with feeding soldiers (services), providing fodder and fuel for horses and vehicles (transportation), and procuring uniforms, equipment, weapons, and ammunition (supply).[1] The great military strategist from Hannibal to Frederick the Great to Napoleon understood the vital link between logistics and campaign success. More recent U.S. leaders such as Patton, Powell, and Schwarkopf realized that without logistics victory in war is impossible.[2] The ACS core competency codifies that realization by establishing the basic principles that enable Air Force capability; regrettably, Air Force logisticians do not spend time studying the history of military logistics nor are they taught integrated logistics concepts in their basic, supplemental, or functional training programs. A historical perspective of logistics officer training at AFIT, the Advanced Logistics Officer Course (ALOC), and functional basic officer courses presents a baseline for comparing

congruency between training and doctrine. A presentation of the historical evolution of logistics officer training at Appendix A (Examining AFIT, ALOC, and Functional Area Training) lays the foundation for reviewing the alignment and congruency between logistics doctrine and training. An examination of the current logistics operating environment and investigation of data trends and themes collected from survey and interview informants provides perspective on the adequacy of logistics training in facilitating the employment of doctrinal tenets in the AOR.

Statistical Correlations: Confirmed Relationships on the Absence of Integrated Training

The discussion thus far examined the evolution of logistics doctrine and training. Data analysis provides insights from the experiences of logisticians that have been deployed and investigates the nature of their required duties and adequacy of their prepatory training. The aggregate findings from survey questions targeted at the need for integrated training are presented in this section. The statistical correlations for the remaining research questions are discussed in the subheadings of this section; emergent findings, unsupported hypotheses, and disproved assumptions are presented at the end of this section.

The first correlation significant at the .05 level (.432, n=41) identifying an absence of integrated training is *deployed cross-functional logistics duties* and *having to "learn on the job" in a deployed location.* The data analysis suggests that officers who were required to perform integrated logistics functions in a deployed location had to learn those duties in-place. Several noteworthy respondent comments further substantiate the integrated duty and OJT connection:

> Baptism by fire! Senior leaders expect performance based on rank and level of responsibility. If you don't know how they expect you to find out how. Little or no time for training!
>
> There was no logistics training for the deployed environment provided prior to deploying. Everyday was a fly-by-the seat of my pants experience.

> Couldn't answer detailed questions about composition of munitions packages, hydrant compatibility, flow rates, etc. Made several WAGs.

These excerpts from past deployments are consistent with the accounts of recently deployed officers presented later in the text. The "trial by fire" analogy also denotes an emergent cultural theme, that of learning on the job without adequate as the accepted method of earning professional credibility discussed further at the end of this section.

The second match *adequately trained to perform deployed duties* and *having to "learn on the job" in a deployed location* was significant at the .05 level (-446, n=38). Although this negative correlation was expected (i.e., if the respondent was not adequately trained there would be a strong perceived need for "on the job" training), the comments illuminated the breadth of cross-functional requirements and depth of knowledge required:

> As deployed LG, I was responsible for vehicle maintenance, operations, and fleet management as well as unit rotations, cargo and passenger movement. My duties also included base supply, individual equipment, fuels, host nation support, and in-coming force beddown." *One would think that the enlisted force will provide the missing expertise. However this is a faulty assumption.* Case in point, my Pax terminal NCOIC, a one deep position, only had household goods experience. Between the two of us it was a challenge to say the least to run the Pax operation.
>
> I was outside the traditional logistics field. I did Support Group Commander duties, responsible for billeting, messing, force protection, and MWR. I was really outside my comfort zone, something I had never done or been trained on.

Data analysis points toward a need for extensive cross-functional expertise and training at a level beyond cursory familiarization or introductory exposure. The dynamic and diverse challenges y deployed logistics officers faced are in accordance with ACS mandates and reach outside the traditional logistics boundaries. The relevance of the correlation between the necessity of integrated training and the potential impact on the EAF strategy are examined in the next section.

Integrated Logistics Officer Training — Do We Need It: Connecting ACS Doctrine with EAF Strategy and Tactical Training

> ***National (security is) endangered by an Air Force whose doctrine and techniques are tied solely to the equipment and processes of the moment.*** *Present equipment is but a step in progress, and any Air Force which does not keep its doctrines ahead of its equipment, and its vision far into the future can only delude the nation into a false since of security (emphasis added).*
>
> — General Hap Arnold

General Arnold's prophetic words have particular relevance when applied to our implementation of ACS doctrine. Although diverse and comprehensive in nature, ACS relies heavily on the exploitation of advances in technology, communications, and information systems. ACS combat capability for future contingencies requires support systems to be "smarter," needing less maintenance and inventory to reduce the logistics footprint and forward-deploy light, lean, and lethal aerospace power.[3] Much of future logistics relies on the role of information, and justifiably so, information and technology remain paramount to leveraging capability. The fusion of advanced information, logistics and transportation technologies allows for more precision, flexibility, and responsiveness in supporting and sustaining the warfighter at the point of need.[4] However, a logistics force structure comprised of *skilled and trained* people is absolutely essential to forge the relationships that will produce agile logistics.[5] Information technology is essential for the replacement of mass quantities with velocity and time definite deliveries, but you must have the capability to integrate those innovations in practical combat application. Advanced technologies alone do not equate to ACS. If you do not have trained personnel who can assimilate, analyze, and respond appropriately using the system technologies to enable combat performance, you have not fully maximized logistics as a force multiplier.

Major General William Farmen, USA retired, provides a vivid case in point describing the railway operations in Europe during the early phases of Operation Joint Endeavor,

> Information could tell through in-transit visibility where the train cars were on the ground, but without any available railway control teams or specialists there was precious little the US could do to influence deteriorating situations. Information is good, but one must have the capability to act on it.[6]

There is a real danger of becoming enamored with the logistics technological revolution and forgetting the necessity of comprehensive training required for the personal tasked to employ those system in combat. That danger is increased when the information systems are integrated, linking a broad spectrum of diverse logistics disciplines and functions. If we are designing an interdependent system of technologies as the cornerstone of our combat employment strategy, then we must ensure that system includes adequate training for the airmen employing it in combat. We must ensure that not only are our systems smarter, but our personnel are also trained to effectively employ those systems as well. In her *Air Force Journal of Logistics* article discussing historical perspectives on future military logistics, Lieutenant Colonel Karen Wilhelm suggests that intellectual change is essential:

> The key change, however, must be intellectual change, for without intellectual change, technological change is essentially meaningless.... Logisticians who grasp technological change without making intellectual changes to fully understand and make the best use of the technologies, are doomed to failure. Intellectual change is *the* requirement to make all others meaningful [7].

Intellectual change begins with realistic training. The most effective implementation of ACS in the AOR requires integration of technology and cross-functional training for the tactical practitioners.

Statistical Correlations: Confirmed Relationships on the Need for Integrated Training

The data supported the hypothesis that there is a need to better prepare logistics officers to perform the integrated functions that are tasked to employ in an AOR. The first relationship "fit"

deployed cross-functional logistics duties and *the Air Force should better prepare officers for cross-functional senior logistics positions* was significant at the .05 level (.564, n=41). Logistics officers who performed integrated logistics duties perceived a need for those integrated skills in future leadership positions and also identified the requirement for additional training. The insight from this connection is the indication that cross-functional development is necessary for logistics officer proficiency in peace and combat.

The second significant correlation identifying a need for expert training in professional development is *having to "learn on the job" in a deployed location* and *attendance at an expert level school would better prepare me to perform duties in the AOR.* Data analysis indicates that those performing integrated logistics duties perceive cross-functional expert training as beneficial preparation. Respondent observations capture the increasing need to grow cross-functional expertise to effectively implement the EAF strategy and the awareness that sister services have already addressed the training requirement:

> We are heading for an environment in which captains and majors will be required to know about our cross-functional areas as part of our AEF concept. We will deploy into situations where these mid-level managers will be the senior logistics representatives – the will require "cross-functional" experience long before they become LGs.
>
> Expert courses like the Weapons School draw from the collective wisdom of it's best and brightest pilots; to include experiences learned in combat. Students are taught principles and spend hours perfecting them. Obviously, if we had such training in the logistics area we would be much better off.
>
> Other service logisticians are not stove-piped. We need at least an operational level understanding of all AF logistics.

The accounts of recently deployed logisticians and empirical data presented later in this text confirm the thoughts above: The future is now, junior officers are currently performing cross-functional duties and serving as the senior logistics representative in deployed locations.

Opportunity Costs of Strategic Misalignment – The ACS Doctrine and Training Gap

The survey results and analysis of current logistics officer training programs reveals a gap between doctrine and training. This disparity in cross-functional training is also misaligned with ACS employment requirements. This gap between doctrine and training represents an opportunity cost in effective and efficient combat capability. The cost of inadequate training manifests itself in the amount of time logistics officers spend learning on the job at deployed locations instead of arriving in the AOR fully prepared to perform their duties. By realigning training with doctrine, the Air Force can capitalize on the "opportunity" to employ logistics as a force multiplier and eliminate the "cost" of inefficient training.

Organizations are strategically aligned when their vision, goals, and objectives are congruent. Successful organizations have a direct linkage between a well-conceived vision, well-defined goals, and specific objectives.[8] The goals are what we plan to do, (e.g., rapidly deploy and sustain light, lean, and lethal forces) and the objectives are what we do at the working level to reach those goals.[9] All actions in the process must be properly balanced and support each other, the tactical competencies that determine *how* and *if* the goals will be met must align with the objectives accomplished to facilitate success. Steven Semler, noted scholar and speaker on organizational performance notes, "Alignment gives people in the organization the knowledge, capability, or skill [read training] and motivations to perform."[10] If tactics and procedures such as training are inadequate or missing, the steps required to accomplish the vision are incomplete. Gaps in objective support erode the strategic support structure of the overall mission, setting the stage for mission failure. Admiral Crowe, Chief Naval Officer, commented on the significance of alignment saying, "We usually get the objectives correct, less so the goals and our vision is usually hopelessly out of date. That is why we win short term but must react to the future."[11]

Air Force strategic misalignment is a slightly different scenario: We have a well-articulated vision and clearly stated goals; however, our methods for obtaining those goals are insufficient. Given the failed historical attempts to develop integrated training and the survey data indicating a training deficiency, it would appear that we are locked in a dogmatic cycle driven by either a denial of the need for training or a refusal to develop training based on prevalent cultural biases (i.e., "any loggie worth his salt doesn't need integrated training"). Figure 2 illustrates the development of a dogmatic training cycle in the History-to-Training model.

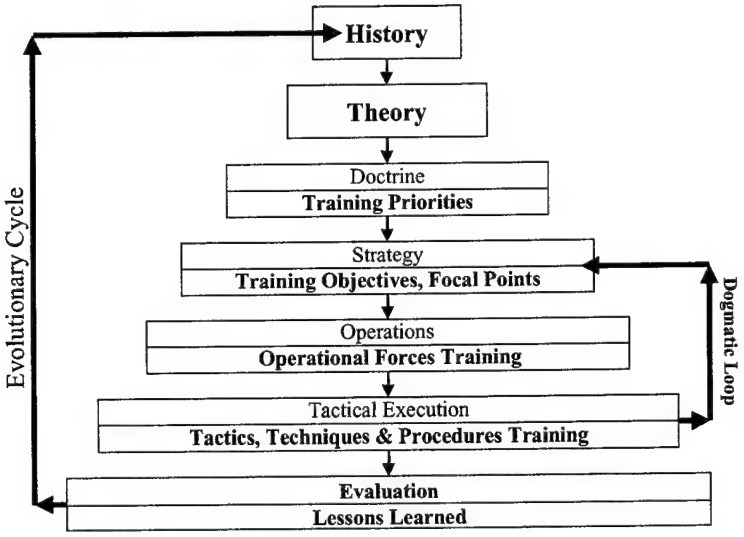

Figure 2. History-to-Training Model

This construct, built on the foundations of the Caffrey model, conceptualizes the progression of training from the specific tenets which are entailed in doctrinal priorities to the broad tactics, techniques, and procedures that are developed and implemented to support that doctrine in combat. Similar to the thinking that leads to dogma in the Caffrey loop, when an evaluation of TTPs in the execution phase is either eliminated or ignored learning stagnates. The potential

lessons learned are cast aside as an irrelevant anomaly. Cultural or political biases institutionalize the preferred tactics regardless of effectiveness. A historical example of dogma in action is the Air Force's adherence to strategic bombing strategy, tactics, and training, throughout the World War II, Korean, and Vietnam campaigns irrespective of the impact those activities had on the adversary's will to fight. For a detailed discussion of Air Force aerial warfare operations in the conflicts listed above see (a) *The United States Strategic Bombing Surveys (European War) (Pacific War)* (b) *SETUP: What the Air Force did in Vietnam and Why,* by Earl Tilford and (c) "The First Jet War," by Dennis Showalter. These sources are denoted in the research bibliography. The urgency of the situation is heightened by the requirement established during the October 1996 HQ Air Force AEF Conference to rapidly deploy tailored force packages anywhere in the world, set up logistics production process quickly, commence operations, and fly combat sorties within 48 hours.[12]

Everything Old is New Again – EAF: The Return to USAF Airpower Projection

> *The Expeditionary Air Force idea was born of a need to be able to react quickly. It was to get back to the rapid part of deployment. It was something we did very well back in the mid 1950s.*
>
> — General John P. Jumper, Commander, U.S. Air Forces in Europe

Just as the search for logistics officer expertise dates back to the Army Air Corps, the EAF concept is also not a new endeavor. While renewed and refocused, it is strongly rooted in the history and traditions of airpower.[13] There are several examples of expeditionary air forces deploying in World War I such as the British Number 29 Squadron's deployment from Gosport to Dover, and the RAF involvement in WWII Operation Torch in North Africa in 1942.[14] In the mid 1950s the job of 19th Air Force was to rapidly deploy anywhere in the world and they did so to places like Turkey, Lebanon, and other "hot spots" around the world.[15] In recent history the

1996 Operation Desert Strike required immediate response to Iraq with limited aircraft providing a wide range of capabilities to meet the CINC's needs. Although the EAF concept was driven by the factors mentioned above, at its core, EAF is about structural change to create a more effective force.[16] Major General Zettler's EAF article in the Fall 1998 edition of the *Exceptional Release* magazine noted,

> Since 1989, which is generally considered the end of the Cold War, the Air Force has drawn down by about one quarter fewer people, yet our overseas deployment commitments have increased by a factor of four; in other words, only 75 percent of the people we used to have are doing over 400 percent more work than we used to do in terms of deployment[17]

The increased operations tempo and corresponding personnel tempo required to meet the objectives of global engagement have driven a need to reduce the numbers of personnel supporting deployments. "Reducing the logistics "footprint" in the AOR to the minimum number of specialists necessary is based on the assumption that technicians have a very good knowledge of what they're doing." Unfortunately that baseline assumption is wrong, all survey respondents and interview informants with deployment experience deployed to the AOR without cross-functional expertise or training. In fact, it is not uncommon for company grade logisticians to be responsible for any or all of the logistics functions at a deployed location. Commanding a team of up to 35 personnel covering the broad spectrum of logistics specialties, they are usually the resident experts and senior logisticians on-site during the 120-day deployment.[18] An account from a transportation officer deployed in 1998 to Tuzla Air Base, Bosnia, as the Provisional Air Base Group Director of Logistics vividly captures the significance of the current logistics-training dilemma:

> There I was, watching the snow fall, contemplating the upcoming Thanksgiving Day. It seemed that everything was going well at my deployed location, until the storm struck. One of our two aircraft deicers was inoperative and the snow removal equipment was on its last legs. At the same time, a Detachment Commander (DETCO) of the Joint Special Operations Task unit was complaining

> that he still didn't have the bottled water the contracting agent had promised to purchase the day before. Another DETCO is preparing to rent a fleet of rental cars on his own American Express card! On top of that, power production equipment just dropped off-line for another unit's mission planning cell, lack of liquid oxygen just became a shortfall for reconnaissance operations, and a C-130 rotator flight still needs to be established here. Critical spares are being held up at customs, and I still don't have commercial airline ticketing capability on line. *Even though I had vehicle operations, vehicle maintenance, base supply and fuels, traffic management, aerial port, contracting, and civil engineering working for me, I had to figure out how to integrate their efforts to get the equipment running, keep the airfield open, and keep all the deployed organizations satisfied with a myriad of logistics concerns.* What would have better prepared me for the challenge? An integrated logistics course demonstrating the dynamic and complex nature of providing agile combat support at a deployed location (emphasis added).[19]

Our increased expeditionary operations tempo has served to illuminate a long-existing absence in cross-functional logistics officer training and capability. The effects of manpower reductions and increased operations tempo, combined with the turning away from a containment-focused garrison force to a projection focused expeditionary force, has exacerbated a pre-existing condition which we can no longer mitigate with massive manpower. Our doctrine substantiates the reality of this requirement, AFDD 2, the Air Force "capstone operational document" authoritatively prescribes cross-functional logistics tasks as key responsibilities of the COMAFFOR, A-4 Director of Logistics staff assistant.

COMAFFOR (A-4) Director of Logistics – A Doctrinal Requirement for Integrated Air Force Logisticians

The EAF response to global contingencies requires a fundamental paradigmatic shift in the way we think about, train for, and employ aerospace power. General Ryan, USAF Chief of Staff, describes the cultural change and expeditionary "mindset" shift by saying:

> We are in the process of a significant transition in the way we do business, and this will require embracing a new culture and an approach to operations that emphasize rapid response. The EAF is a fundamental shift in the way we *think*, and how we organize, *train*, equip, and sustain aerospace forces[20] (emphasis added).

Air Force operational doctrine formalizes this paradigm and organizational shift in the employment of aerospace power by subordinating the Air Force elements within a Joint Task Force (JTF) under a COMAFFOR. Air and space forces will be usually offered to the supported Commander in Chief (CINC) as a task-oriented, tailored organization called an Air and Space Expeditionary Task Force (ASETF).[21] The COMAFFOR A-4 Director of Logistics is responsible for logistics plans, force beddown, transportation, supply, maintenance, food and exchange services, civil engineering, explosive ordnance disposal (EOD), and related logistics activities.[22] The A-4's job description mirrors the responsibilities prescribed in ACS doctrine: It appears that al least structurally our logistics doctrine and combat strategy are aligned and congruent. Ah, but looks can be deceiving, the EAF challenges for ACS require a comprehensive analysis of logistics support to determine how best to meet the warfighter's operational needs. The ability to rapidly deploy a tailored package of aerospace power into the AOR and commence operations immediately requires that logisticians anticipate operational support needs, and in a real sense, know what the warfighter's need even before they realize they need it. This prerequisite for new skills and the mental agility to arrive quickly and "fight on arrival" points towards more realistic training to ensure integrated logistics functions are executed rapidly and accurately. The experiences of another young logistics captain deployed to the 31 Air Expeditionary Wing, Aviano AB, Italy, as the Operation Allied Force, A-4, provides a good example of the need to be proficient in agile combat support functions as resident logistics expert on the COMAFOR staff.

> Deployed to a provisional air base squadron as the LG and serving as an A-4 officer on the COMAFFOR staff, *I was responsible for contract management, vehicle fleet management, vehicle maintenance, POL, TMO, Air Freight, Bio/Environmental, Civil Engineering, Base Supply, and Logistics Plans redeployment functions*. I learned loads of information through managing each that I would have not learned otherwise. Fortunately, *trail-by-fire worked well for me in each case, but it is not the ideal situation and not a concept we should be comfortable handing to the provisional commanders of EAF/CCs*. Working Log

> Plans assignments exposed me to several of the functions, but in many cases did not prepare me for managing most of them. *Many of the processes I was responsible for I saw for the first time once deployed. It took a lot of time to become familiar with the functions I was managing. The learning curve was pegged which made making key decisions effecting logistics outputs difficult.* Exposure to these other logistics functions at an agile logistics school could have helped fill the gap[23] (emphasis added).

The initial concept of operations phase for both the EAF and ACS development highlighted additional training requirements to support EAF strategy and ACS doctrine implementation. The USAF Scientific Advisory Board review of the AEF operational employment procedures suggested that training must shift to an expeditionary emphasis. The advisory board specifically highlighted the need for establishing AEF Flag exercise training and minimal maintenance training among others.[24] The board also recommended that the Air Force provide training from classroom to the field that inculcates the AEF philosophy in all members of the Air Force. The ACS Concept White Paper identifies training as required to optimize the capabilities of the force and institutionalize the concept.[25] The White Paper also notes that realistic exercise scenarios are essential to maximize training results and all ACS elements must be properly represented to emphasize the roles these functions play in the employment of airpower. The Air Combat Command ACS Concept Paper denotes logistics support personnel training requirements for multiple related (cross-functional) skills as well as advanced education and advanced specialty-training requirements to maximize effective ACS implementation.[26] This prerequisite to somehow acquire instant cross-functional expertise becomes paramount in the AOR where time is precious and every minute wasted learning on the job is a minute closer to mission failure. "If logistics cannot support the sequence of events in the operational plan, it is not a plan at all, but simply an expression of fanciful wishes."[27] Failure to recognize the time required to provide logistics support or the delays caused by logisticians understanding and mastering the

requirements on the job may force the operational commander to change his plan which impacts the air campaign or impedes opportunities to exploit enemy weakness. So what does all this mean for the Air Force, what are the potential consequences, and what are the answers to the problem?

Integrated Logistics Training: The Need for Congruency between ACS Doctrine and Training

History has shown that military forces that did not maintain congruency between their doctrine, strategy, and tactics failed in combat. For example, In 1941 Japan had the most experienced pilots in the world, well trained and motivated, they used effective combat doctrine derived from campaigns against China and the Soviet Union.[28] Japan's air and naval air forces doctrine was offensive and employed rapid combined operations of fighter, bombers, and reconnaissance aircraft to perform offensive sweeps and close air support.[29] Their strategy was simple, destroy U.S., British, and Dutch power in the Far East, establish a sphere of influence, and defend the perimeter.[30] Japan was counting on a short war initially, but after the U.S. response to Pearl Harbor they prepared for a protracted period followed by a decisive naval battle or a favorably negated peace.[31] Meticulous aircrew training was emphasized to hone operational expertise. However, in the drive towards perfection the pilot production pipeline was extended over three years!

As the war progressed the congruency between doctrine, strategy, and training dissipated. Occupied territories were far too large to defend and experienced pilots were lost on extensive long-range missions in places far from the center of the empire. By 1944 90% of pilots with 300-600 hours were lost, yet the aircrew training cycle had not been accelerated to keep up with the attrition warfare strategy. By the end of the war the experienced factor over the Pacific skies had been reversed, Japanese pilots with only 100 flying hours were engaging grizzled Allied

combat veterans. Although the lack of Japanese raw materials and industrial capacity was a contributing factor in pilot production given the inability to produce adequate trainer aircraft, the emphasis on perfection, inflexibility in training schedules, and absence of surge capability severely hampered Japan's success in the air war.

Similar to the need for congruency between military strategy, operations, and tactics to ensure each level defines the objectives of the next, proper congruency between doctrine, strategy and training is necessary to support the feasibility of achieving strategic success. Figure 3 depicts this relationship graphically via the History to Doctrine and Training Evolutionary Congruency Cycle. Doctrine and training evolve through the continual application of lessons learned from the most recent history. Those lessons become part of the wealth of historical knowledge, which provides the foundation for doctrinal development. Combining what we know from history with what we believe theoretically codifies the foundational principles and tenets in doctrine. What we profess as important, "What we do" drives training priorities, "how we do it". The macro level training priorities influence strategy development and cascade down in levels of detail through operational objectives and focal points, translating strategic concepts into training required to prepare operational forces for combat. The micro level TTPs are developed and taught to hone the tactical skills needed for achieving operational objectives in the combat execution phase. Learning occurs as those tactics employed in combat are evaluated and the feedback is incorporated in the evolutionary cycle via lessons learned. The vertical arrows leading from history to lessons learned in both pyramids depict the alignment of TTP training with operational objectives to effectively support tactical employment. The diagonal "Z" arrows connecting the History-to-Strategy model to the History-to-Training model represent the congruency between doctrine and training explained in greater detail via the "Z-

Diagram." AFDD 2 describes the need for congruent objectives and strategies, "the "Z" figure illustrates the relationship between the objectives at each level. Objectives are normally derived from the next higher level...assessment of lower level results lead to changes in higher level history and aligns those objectives with congruent strategic, operational, and tactical training requirements necessary for the successful execution of military campaigns. strategies or

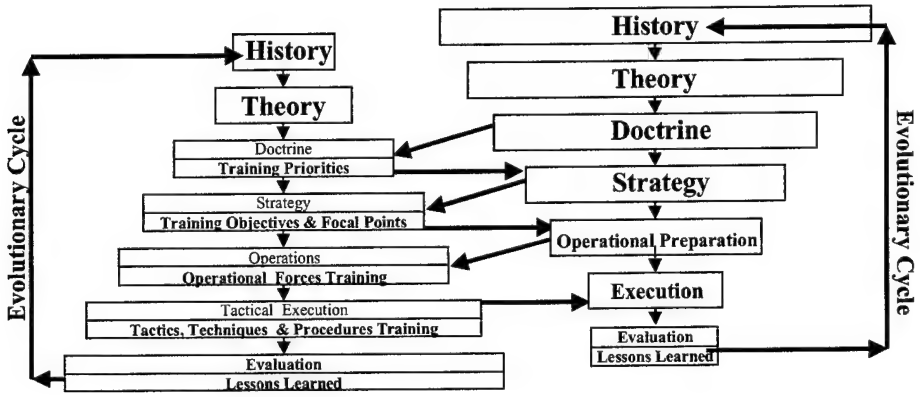

Figure 3. History-to-Doctrine and Training Evolutionary Congruency Cycle

objectives."[32] The History to Doctrine and Training Congruency Model captures the significance of congruent strategy, operations, and tactics, chronicled throughout military

Structurally, our doctrinal foundation and strategy are aligned and congruent. Conceptually we can illustrate the concurrent evolution of doctrine, strategy, and training to employ combat power. However logistics officer training, the foundational pillar that supports the entire construct, is out of balance. If ACS is the critical link in aerospace power that we profess, and if

we truly regard personnel as our most valuable resource, then should we not provide adequate training to support our cornerstone doctrine and airpower employment strategy? The corrective mechanism for establishing congruency is reconciling training with the core competencies and requirements of strategy and doctrine. Where can we locate a benchmark to align Air Force ACS doctrine, EAF strategy, and tactical logistics training? We need look no further than the origins from whence the Air Force came to find the road map — the United States Army.

Integrated Logistics Officer Training — Can We Find It?

The Air Force is not the only service that has had to adjust its doctrine to an expeditionary focus. Brigadier General Charles S. Mahan Jr., Commander of the 13th Corps Support Command captured the need for change in a 1995 Army Logistician article:

> There was a time when warfighters focused only on the Soviet threat and the war in Europe, those times are gone… The world and the Army have changed… The Army's focus is directed towards multiple threats across the spectrum of conflict…. We are restructuring to be a force-projection Army able to rapidly deploy at a moment's notice…. Those changes are driven by doctrinal changes in "how" we fight and "how we sustain" the fight - *multifunctional support doctrine not only compliments warfighting doctrine, it serves as the catalyst for supporting the fight* [33] (emphasis added).

Whether it is called the "catalyst" or the "cornerstone," both the Army and Air Force recognize the criticality of logistics in their warfighting capability. The Army however has responded to this doctrinal requirement by restructuring it's logistics officer training to develop multi-functional logisticians better prepared to support and sustain combat operations. If we truly embrace the heritage of airpower doctrine cultivated into operational strategy and separate tactics, techniques, and procedures at the Air Corps Tactics School, then it is also appropriate to postulate initial expeditionary Air Force logistics officer training using established Army multi-functional logistics training programs. As Army Field Manual 100-5 (FM 100-5) states,"

Logistics applies across the full range of military operations at all levels of war."[34] The origins and evolution of TRADOC and the Combined Logistics Captains Career Course (CLCC) are discussed in Appendix B, (Benchmarking Army Interdisciplinary Logistics Officer Training) as a representative response to changing operational combat doctrine and strategy by aligning corresponding changes in combat support doctrine and training. Data collected from logistics officer's first-hand experiences in deployed locations provides additional suggestions for methods to align training with expeditionary force projection requirements.

Statistical Correlations: Confirmed Relationships on Obtaining Integrated Training

The data analysis uncovered two correlating factors in identifying the means to obtain integrated training. A*ttendance at an expert level school would better prepare me to perform duties in the AOR* and *a selective expert level cross-functional school would provide a better career path* were a significant "fit" at the .05 level (.393, n=40). Respondent observations suggest training as a method to improve performance and also as a means to prepare logistics officers for combat responsibilities and senior level positions:

> Training adds to the competence and preparation of our officers.
>
> To be qualified to lead multiple logistics disciplines requires more education then is currently provided.
>
> It would allow training to mirror the AEF and the tasks required of us as the concept develops.
>
> Be selective and give those who succeed the opportunity to go to the top!

The data indicating a perceived need for a selective, integrated, expert logistics course combined with the empirical confirmation of the Army's current cross-functional programs suggests that integrated logistics officer training is available.

Integrated Logistics Officer Training — How Do We Get It?

Examining Air Force solutions to pilot combat proficiency requirements as a model for correcting logistics combat training deficiencies is both practical given our ACS training shortfalls and relevant as a baseline for developing realistic expeditionary employment training for Air Force logisticians. A discussion of the development and benefits of the USAF Weapons School and Red Flag exercise program is provided in Appendix C, Applying the Weapons School and Red Flag Templates.

The data support the benefits of leveraging the legacy of operational training as a pattern for establishing training aligned with doctrinal requirements. A significant correlation .05 (.405, n=35) occurred *at selective expert level cross-functional school would provide a better career path* and *attendance at an expert level course would better prepare officer for integrated senior level responsibilities*. This relationship is predictable i.e., if a training program provides a better framework for career development then attendance in the course should better prepare an attendee for senior leadership. Respondent comments illuminate suggested courses of action the Air Force can take to provide integrated logistics officer training:

> Need more formalized and standardized training for our junior officers. Presently there is too much hit and miss going on.
>
> The level of information at ALOC is too basic. It needs to be followed up with higher level information.
>
> A formal, in-residence course providing in-depth analysis of the operational tenets of all logistics disciplines, with focus on the inter-relationships among each discipline as well as core responsibilities associated with the student's future level of responsibility.

Emergent Findings

Thirty-four unexpected correlations emerged from the data analysis. Although the quantity is too numerous to discuss in the text, (see Appendix F for the Spearman Rank-Order Correlation

Coefficients) a few of the emergent relationships are noteworthy. There was a relationship at the .05 level of significance (.525, n= 36) between *attendance at an expert level course would better prepare officer for integrated senior level responsibilities* and *the current logistics crossflow program adds value to the Air Force.* Respondents' comments reflect a perception of mitigating or hedging the extent of value added in crossflow training:

> I agree that it adds value, I'm not sure it works in practice. The USAFE/LG told me that she needed a better understanding of transportation during Allied Force. Learning on the fly was difficult and late to need for the fast moving operation.
>
> Expanding the base can only aid the participants' as well as prepare them for future positions.
>
> Right now it's the only thing we have that provides practical experience in other disciplines.

Similar to the sentiment of compromise in the publication of AFM 1-10 without logistics in the title to expedite getting something out to the field, the emergent theme appears to be that some level of cross-functional exposure is better than nothing at all. Another emergent relationship with a .05 significance (.410, n=41) was *selective expert level cross-functional school would provide a better career path* and *perception of the role logistics plays in the implementation of the EAF.* This correlation is somewhat puzzling as it spans peacetime logistics officer career development and the significance of logistics in warfighting strategy. Respondent comments again provide insight into the perceptions that integrated logistics training is critical in peacetime to better prepare logistics tacticians to employ combat strategy in war:

> For the EAF concept to be successful, it must rely heavily on our ability to deploy and sustain. Training is key, if we don't have log officers who know how to do this then there will be a steep learning when someone gets called up.
>
> Logistics is still THE vital link. My guess is that we will be even busier than before as we reach across the loggie community to support a myriad of deployments. If we don't have the proper training each person will have to reinvent the wheel… it may get done but it won't get done right.

> My perception is that "logistics will happen somehow and someplace" a bad way to do our jobs.

Recognizing the criticality of logistics in the viability of the EAF, respondents perceptions of the gap in training to support the EAF strategy is in line with the findings of this research.

A final emergent theme was respondent cultural and attitudinal perceptions on the value and need for logistics training. Many respondents indicated that valuable learning was only possible via "hands-on" training in the "school of hard knocks." Lieutenant General Nowak alluded to this mentality in his discussion of changes in career path development: "Officers may be hesitant to leave a familiar environment. However, I believe performance of a leader outside one's comfort zone is a true test of character and leadership abilities."[35] Although adaptability is a key element of leadership, it is disturbing to discover that culturally logisticians believe the measurement of professional expertise is in situational survival and *not* expertise gained through experience combined with training. As Professor Caffrey noted during an interview:

> The notion of creating your experts through "trial by fire" rites of passage has been tried by our pilot brethren with catastrophic results. The notion of '*elan* as the most critical attribute cost many a French solider his life in World War I. Ignoring practical training requirements is not only a reflection of dogma, it's just not a smart way of preparing to fight if you want to win the war.[36]

Unsupported Hypotheses, and Disproved Assumptions

One of the initial assumptions driving this research was that deployed duties would correlate with the questions regarding adequate training, learning on the job, and the need for integrated training. The hypothesis was that deployed logisticians would indicate a need for integrated training to adequately perform deployed duties. However, there were no significant correlations between "deployment over the last ten years" and any other factor. The faulty assumption was viewing deployment as an operational mechanism instead of duties. It appears that the requirement to deploy is not a trigger for training evaluations but the nature of the duties

performed in the AOR is. Cross-functional duties and responsibility for integrated logistics functions is a more accurate indicator of training adequacy and the perceived need for inter-disciplinary training. Additionally, many respondents deployed and performed duties within their primary careerfield. Those respondents remained satisfied with their level of training. Data analysis indicates that not all deployed logisticians are required to perform integrated duties in deployed location.

A second assumption was that informants would not view ALOC attendance and the Crossflow program as adding value to logistics officer training. However there was an emergent correlation at the .05 level of significance (.356, n=34) between *ALOC adds value to logistics officer education, training, and development* and *the current logistics crossflow program adds value to the Air Force.* Respondent's observations indicate a favorable perception of the value added but are hesitant to full endorse the current programs:

> *ALOC is a good course, however not where it needs to be for cross-functional aptitude which is necessary.*
>
> *ALOC provides some value, but limited.*
>
> *Crossflow could be improved.*
>
> *Crossflow adds value but people still have a penchant to identify with one specialty over another.*

My assumption that logistics officers would find little value in current career development programs was incorrect. The data revealed a personal bias towards ALOC based on my individual experiences. The "something is better than nothing" perspective appears to permeate throughout logistics officers perceptions of doctrine, training, and professional development programs.

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Part 4

Conclusions and Recommendations

Logistics and logisticians are always catching up with doctrine. If logistics is to be a success, more emphasis must be placed on logistics earlier in the doctrine cycle. Logistics is not the bill payer, it is the weighted value added for battlefield success.... The crux of the problem is that we are without a true azimuth to follow and we don't practice what we preach.

Major General William Farmen, USA Retired

Conclusions

This research identifies a significant deficiency in integrated logistics officer training. The data reveals a disparity between Air Force ACS logistics doctrine, EAF strategy, AEF operational employment practices, and logistics officer training programs: The Air Force logistics core competency, cornerstone logistics doctrine, and combat strategy remain incongruent and misaligned. Corresponding logistics officer professional development deficiencies caused by the absence of multifunctional logistics training are also identified: Logistics officers are not adequately trained to perform integrated duties in deployed locations. The imbalance between our doctrine and training philosophy exposes a fault-line originating in the support structure of our *Global Engagement* vision continuing through the expeditionary force projection strategy and the logistical tactics, techniques, and procedures needed to employ that strategy. This logistics training fault-line lies at the very heart of our Expeditionary Air Force strategy and the tremors resonate throughout our AEF operational employment procedures. We must bridge the gap and align our objectives and strategy with doctrine by maturing combat

capability through training and educating logistics officers to employ systems at the tactical and operational levels.[1] Then, and only then, will our espoused doctrine-what we tell the world and our doctrine in use-what we do to employ that doctrine-be congruent.

If we do not acknowledge the urgent need for integrated logistics training we are placing successful execution of the global engagement vision at risk. The scope of the potential problem is vast: At worst, it undermines the Air Force's ability to effectively project aerospace power and degrades AEF capability. At best, it delays the employment of air campaigns to the supported Joint Forces Commander (JFC) and degrades the speed, flexibility, and lethality tenets of aerospace power. The potential for disaster is magnified if we do not train *institutionally* our logistics experts to employ light, lean, and lethal aerospace power in the AOR.

Recommendations

Several logistics officer training areas requiring further study emerged during this research:

1. The Air Force should use the analysis of the logistics officer survey data as an indicator for further investigation into the methods used to "grow, train, groom, and educate" logistics officers. The survey provides a baseline data collection instrument that should be administered to the larger Air Force logistics officer population to acquire and asses logistics officer perceptions.

2. The logistics officer cultural values of "rites of passage" learning experiences and "trial by fire" training should be investigated to determine if these beliefs are prevalent within the Air Force logistics officer population.

3. Existing logistics officer training programs such as the AFIT Combat Logistics course and ALOC should be evaluated to determine if expansion to include integrated logistics cirriculum is feasible. Candidate locations should also be identified to incorporate realistic logistics combat employment exercises with course material.

A cross-functional logistics officer training course modeled after the Army logistics and Weapons School programs is recommended as a solution to bridge the gap between logistics officer training requirements and ACS doctrinal principles and AEF employment strategy. A

selective expert–level integrated logistics course located at Nellis AFB and interacting with the USAF Weapons School and Red Flag is suggested as the course location. Employment and re-deployment aspects of the Red Flag combat exercises offer ideal capstone "hands on" training application and evaluation opportunities for the integration, interaction, and synchronization of integrated logistics training in real world scenarios.

Logistics officers require a broad base of technical expertise, job knowledge, and work experience to meet the demands of senior logistics positions and manage logistics as an integrated and complete process.[2] In essence, enhancing logistics officer competency and performance in combat as well as logistics officer professional development hinges on developing multifunctional officers to fill multidisciplined jobs across the logistics spectrum in all grades. "The essential element is training, it is a basic requirement in assuring our logistics officers are prepared for success. Our current training and career paths do not develop officers for key positions that are multidisciplined and multifaceted."[3] An Agile Combat Logistics School, such as the course interacting with the Weapons School and Red Flag programs would better prepare logistics officers for employing logistics in peace and war. Just as the Weapons School creates the "instructors instructor" and builds future operational leaders the Agile Logistics School would "enable the logistics enabler" and prepare logistics officers for the challenges of integrated logistics leadership positions. Nellis provides the ideal environment for integrating the realities of integrated logistics requirements and expeditionary constraints in the "train as we fight airpower exercises. Creating multifunctional logistics practitioners will leverage the rapid employment of aerospace forces. Headquarters Air Education and Training Command (AETC) is pursing the Agile Logistics School concept as the foundation for

establishing an Air Force Logistics Battle Lab. Figure 4 outlines the proposed Agile Logistics School course flow and depicts a Weapons School introduction and Red Flag capstone exercise.

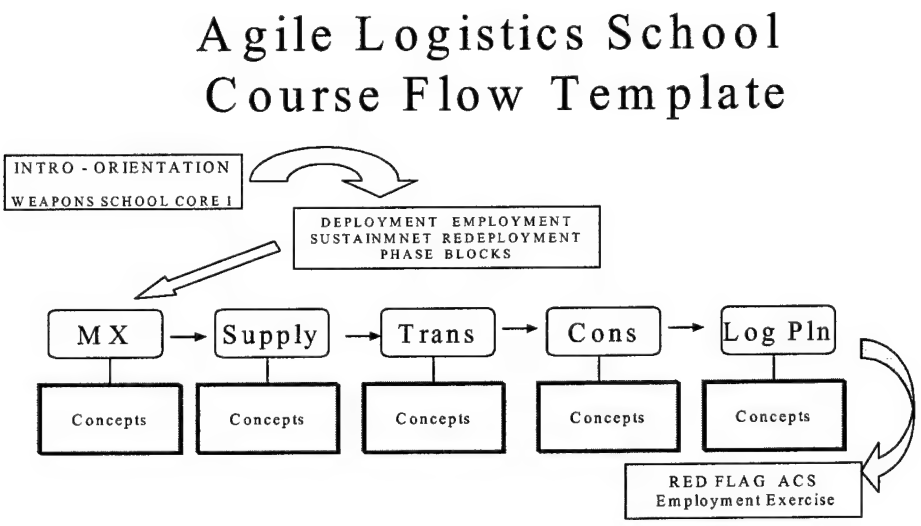

Figure 4. Proposed Agile Logistics School

Notes

[1] Lieutenant Colonel William T. McDaniel Jr. USAF, "Combat Support Doctrine: Coming Down to Earth," *Air Force Journal of Logistics* XI, no 2 (Spring 1987): 13-16.

[2] Lieutenant General John M. Nowak USAF, "Changing Logistics Career Path," *Air Force Journal of Logistisc* XVIII, no. 4 (Fall 1994): 1.

[3] Lieutenant General John M. Nowak USAF, "Logistics Career Development-A Reality," *Air Force Journal of Logistics* XVIIII, no. 2 (Spring 1995): 1.

Part 5

Appendix A: Examining AFIT, ALOC, and Functional Area Training

But everyone who hears these words of mine and does not put them into practice is like a foolish man who built his house on sand. The rain came down, the streams rose, and the winds blew and beat against that house, and it fell with a great crash.

— Matthew 7:26-27

AFIT Graduate Logistics Management and Continuing Education Courses

AFIT has a long history of providing graduate logistics education focused on teaching concepts and techniques for managing logistics functions. Critical analyses combined with quantitative as well as qualitative methods are used to establish an intellectual foundation for understanding and applying managerial principles and concepts. Following the tradition established in 1955, AFIT creates experts in the traditional logistics disciplines of supply, transportation, contracting, maintenance, management (logistics plans), and several non-traditional functions such as cost analysis and software systems management.[1] The education programs are designed to develop the logistics generalist needed today and in the future by fostering a broader look at the entire logistics field.[2] Although each programs' cirriculum includes courses in related logistics areas to increase comprehension of the interdependence of the various functions, the primary purpose is to improve students skills in a specific functional area.[3] Students are being educated to fill specific functional area positions in the field coded as

requiring an advanced academic degree.[4] The Logistics Management program however, does offer a systems perspective of the overall logistics field aimed at providing the student an appreciation for the interrelationships of logistics planning, transportation, maintenance, and acquisition.[5] Concentrated on sharpening graduate level academic expertise, the AFIT courses do not address operational or tactical application of combat logistics techniques and procedures in a wartime environment. In response to the logistics communities' need for a "real world" logistics training course, AFIT established the first Combat Logistics Course in 1985 to expose managers to wartime logistics operations and planning.[6] AFIT's Department of Logistics Management education programs continue to provide a broader selection of courses to meet operational training requirements.

AFIT offers a series of four developmental classes in cross-disciplinary logistics management to provide exposure to the broad spectrum of logistics systems.[7] Comprised of lectures, discussions, group activities, and exercises, these professional development courses primary positive impact is the interaction between the mix of logistics disciplines, officers, enlisted personnel and civilians.[8] LOG 299, the current Combat Logistics course has evolved to examine the impact of logistics on combat operations and the support of national policies. It is a two-week mid-level professional development course, which provides a multi-service view of logistics in a combat environment that exposes students to wartime roles and responsibilities stressing policy and doctrine and their effects on the ability to conduct combat operations.[9] The course culminates with student participation in the development of a Time Phased Force Deployment Document (TPFDD) which they apply in a war game to help them learn to resolve logistics problems. Although the inter-disciplinary interaction is valuable, LOG 299 primarily focuses on the logistics planning process, *not* the ACS logistics employment functions. In fact,

all the supplemental logistics courses in the Department of Logistics Management catalog focus on policies, programming, and planning; *not* integrated logistics employment functions.

The Air Force *Education and Training Course Announcements* (ETCA) database, which lists all formal schools, contains only two integrated logistics courses: AFIT's LOG 299, Combat Logistics Course, and the AETC Advanced Logistics Officer Course (ALOC). Supplemental training courses such as the Contingency Wartime Planners Course (CWPC), Joint Doctrine Air Campaign Course (JDACC) and Joint Operation and Execution System (JOPES) class and are all focused primarily on deliberate and crisis-action planning. Although they enhance understanding of planning, developing, and executing a Joint Air Operations Plan (JAOP) to deploy appropriate forces and logistics support and employ the right mix of airframes and munitions, none concentrates on the roles and missions an officer must be familiar with as a deployed provisional squadron or group LG or COMAFFOR-A4.[10] ALOC emerged as the second formal program developed after the establishment of the AFIT School of Logistics in the long procession towards creating cross-functional logistics expertise.

Advanced Logistics Officer Course (ALOC) – The Attempt to Create Cross-Functional Logisticians Continues

Envisioned as an integrated graduate-level logistics course designed to prepare field grade officers' for cross-functional logistics assignments, ALOC was the preliminary means devised to bridge the gap between officers with specialized functional experience and the integrated logistics knowledge required for the newly created 21L "Logistician" Air Force Specialty Code (AFSC). Air Education and Training Command (AETC) developed the course to allow field grade officers to put the final touches on their experience and expertise in preparation for increased integrated logistics responsibilities. The thrust was to put their experience and knowledge to the test using case studies, computer simulations, and problem solving exercises

focusing on the interrelationships and complexities of joint warfighting, wholesale and retail logistics, acquisition, and integrated logistics process at both the staff and unit levels.[11] The idea of this capstone program was to make field grade officers fully aware of the process interactions across the entire logistics functional spectrum and expose students to hands-on case studies, computer simulations, operational and problem-solving exercises, and role playing. These applications in near "real" scenarios would serve to better prepare students for senior logistics leadership positions.[12] Regrettably, ALOC has not developed into the rigorous integrated capstone program conceived during inception, but has evolved into a two-week familiarization seminar.

Currently, ALOC is structured as a two-week cross-disciplinary logistics orientation course that provides training in the skills required to apply integrated approaches to logistics disciplines in support of warfighting, operational and training requirements.[13] Topics include acquisition weapons systems support, wholesale/retail life cycle process and utilization of the Air Reserve Component.[14] Students are provided cursory level academic instruction in non-graded lessons covering the basic duties of each discipline. Small group exercises, scenario analysis, quizzes, and tours of various commercial logistics operations complete the course offerings. Each officer is tasked to prepare a short presentation on their area of expertise, as an example a transportation officer would brief the responsibilities of the various jobs held in the careerfield and the duties performed in their current position. The course is aircraft maintenance-centric with the final exercise being a simulated sortie generation tasking to support an air operations plan, air tasking order (ATO). Similar to the LOG 299 course, one of the primary benefits of ALOC is the opportunity to crosstalk logistics topics and share information with logisticians from around the world. Although exchanges and interaction with fellow professionals is beneficial, the scope of

ALOC by no means satisfies everything required to meet the material needs of Air Force combat units.

The Foolish Builders — Air Force Functional Logistics Officer Courses

Air Force logistics officer training programs across the disciplines as a whole do not provide inter-disciplinary training in their basic officer courses. Reviewing the cirriculum for each logistics AFSC reveals a concentration on the peacetime activities of each functional area. The six-week transportation basic officer course teaches students the major historic events of the transportation, along with the responsibilities of vehicle operations, vehicle maintenance, and combat readiness.[15] Aerial port operations, and traffic management, are included in the instruction as well as classroom deployment exercises and an overview of the relationships between base functions. There are no lessons presented on supply, contracting, logistics plans, or aircraft maintenance functions. The basic supply operations officer course covers 54 academic days focused on the skills and knowledge needed to perform the duties of supply officers in the management of the Standard Base Supply System (SBSS).[16] The program is divided into phases with topics ranging from basic supply functions, stockage policies, and equipment management to fuels support and contingency/wartime missions support.[17] Similar to the transportation course, logistics disciplines such as contracting, plans, and aircraft maintenance are not contained in the supply cirriculum. The remaining logistics officer initial training courses follow a similar pattern, emphasizing functional specialization as a foundational basis in the classroom for acquiring expertise through application and experience in the field. The Career Field Education Training Plans (CFETP) for each career field requiring task qualification for upgrade certification do not contain cross-functional logistics sections or core tasks.

Although the basic logistics officer training courses are structured to build specialty expertise to facilitate company grade officers technical development, the Air Force provides the opportunity to acquire knowledge in a second logistics discipline through the cross-flow program. As they grow, officers cross-flow to another logistics area to gain integrated logistics experience. They are initially assigned to a new unit to gain familiarity with the terminology, mission, and organization before they attend a bridge course. The bridge courses are abbreviated versions of the basic officer technical training courses and assist in the transition to the new career field. The objective of cross-flow is to develop holistic officers that can effectively manage logistics as a complete process preparing them to meet Air Force requirements.

Notes

[1] "Graduate Management Programs," AFIT Graduate School of Logistics and Acquisition Management, n.p.; on-line, Internet, 9 March, 2000, available from http://www.afit.mil /schools/ catalog/98%2D99/LA/grad_mgmt_prog.html.

[2] Lieutenant Colonel Gary L. Delaney USAF, "AFIT Programs to Prepare the Logistics Generalists," *Air Force Journal of Logistics* 19, no. 4 (Fall 1985): 13.

[3] AFIT Graduate School, Internet, 9 March 2000.

[4] *ibid.*

[5] AFIT Graduate Management Programs, Internet, 9 March 2000.

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[7] Lieutenant Colonel Russ Anible USAF, "AFIT's Department of Logistics Management," *Air Force Journal of Logistics* 29, no. 3 (Fall 1995): 65.

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[11] Lieutenant General John M. Nowak USAF, "Logistics Career Development-A Reality," *Air Force Journal of Logistics,* 29 no. 2 (Spring 1995): 1.

[12] Major General Marcia Harris USAF, "The New Career Path," *Air Force Journal of Logistics 28,* no. 2 (Spring 1995): 3.

[13] "Advanced Logistics Officer Course (ALOC)," 1-2, on-line, Internet, 9 March 2000, available from http://www.lackland.af.mil/345trs/345%Faloc/course.htm.

[14] *ibid.*

[15] *ibid.*

[16] *ibid.*

[17] *ibid.*

Part 6

Appendix B: Benchmarking Army Interdisciplinary Logistics Officer Training

> *Therefore whoever hears these words of mine and puts them into practice is like a wise man who built his house on rock. The rain came down, the streams rose, and the winds blew and beat against that house; yet it did not fall, because it had its foundation on the rock.*
>
> — Matthew 7:24-25

In 1973 the Army reorganized and established the Training and Doctrine Command (TRADOC) to incorporate the training, instruction, formulation of fighting doctrine, and weapons requirements activities under one command focused exclusively on training, teaching, and developing the Army.[1] The idea was to put combat developments back into the schools, concentrate on doctrine, and train soldiers in that doctrine. The Army needed a performance oriented program with a "train-evaluate-train" assessment system that required soldiers to perform to established standards and forged a better link between the classroom and tactical mission requirements.[2] TRADOC's first commander, General William E. Depuy, believed that combat focused training had been neglected saying,

> I think you should train a man for the job he is going to perform, and then you can educate him so that the intellectual and moral environment in which he pursues his particular job will be enhanced...the prime objective should be effective weapons-systems performance and there should be a solid link between doctrine and training.[3]

The Wise Builders – Army Combined Logistics Captains Career Course (CLCC)

Established in 1993, CLCC is one of those revolutionary training courses General Depuy envisioned. Created to meet the logistical challenges of an expeditionary Army, CLCC produces multifunctional logisticians better prepared to manage the requirements of supporting combat. A 20-week course designed to provide all Army logistics officers formal training in cross-functional logistics, CLCC brings together company grade officers from munitions, supply, transportation, aviation logistics, and the medical services corps.[4] The course is divided into three phases and prepares officers to serve in positions requiring multifunctional skills similar to those performed by an Air Force COMAFFOR J-4 Director of Logistics. Phases I and II are primarily prepatory instruction. Phase I is a seven week block of professional Military Education (PME) similar to Air Force Squadron Officer School. Phase II contains five weeks of advanced technical development in the student's core specialty.[5] Phase III is where the real multifunctional logistics training occurs. During this eight week block, students are taught battlefield tactics and challenges of combat support in all areas of logistics including: (1) fueling, maintaining, transporting, and sustaining soldiers, equipment, and weapon systems. Phase III culminates with a practical application logistics estimate exercise. [6] CLCC graduates understand the details of logistics in warfighting and are conversant in the concepts of cross-functional logistics employment on the battlefield.

CLCC training is also a part of the Army's response to reorganization and reductions in force strength. By creating multifunctional logisticians who can adapt quickly to requirement changes and fill multiple logistics billets, CLCC provides the manning flexibility and versatility to support a force projection strategy. The Army recognizes the criticality of logistics in warfighting and is making a long-term investment in human resources by training technically proficient and tactically competent logisticians to perform multifunctional operations across the

spectrum of disciplines. Brigadier General emphasized the significance of CLCC in the Army's strategic plan while addressing a 1995 graduating class,

> Preparing young officers today for increased senior level responsibility tomorrow begins with providing a doctrinal foundation for everything you do.... Not only must you be technically proficient; you must be a creative and innovative trainer, a problem-solver, and a leader in changing times. Learning integrated logistics tactics, techniques, and practices will help you apply that doctrine and make you a better-prepared officer and logistician, regardless of the mission or the place.[7]

By recognizing that experiences as a Captain lay the foundation for logistics officers future careers, the Army is developing junior logistics officers with integrated logistics expertise and growing future executives with the capability to leverage the logistics system from "factory to foxhole", streamlining process times and multiplying combat force capability. The Army has taken integrated training from the classroom and applied it to the battlefield, incorporating realistic logistics integration in the National Training Center (NTC) field training exercise program.

Eliminating the Blind Spot – Using Operational Experience to Align Doctrine and Training

Capitalizing on the wealth of lessons learned from experiences in Southwest Asia, the historical record of proven combat operations over the last 10 years, and feedback from logisticians in the field, the Army refined combat support doctrine and operational training to incorporate logistics functions. As an example, one of the valuable lessons learned for OPERATION DESERT STORM was that soldiers and leaders did not understand the critical issues of distribution on the battlefield. Because it is only in the combat environment that leaders deal with "realistic" logistics problems and learn about the integration of the total system, the problem was intensified during the war.[8] The distribution management problem could have been avoided if high intensity training in a realistic environment would have been conducted in peacetime, equipping soldiers, leaders, and managers with an understanding of the system.[9] The

training shortfall on the battlefield and the importance of integrated logistics training was substantiated during the joint Army and Air Force Kurdish humanitarian assistance during OPERATION PROVIDE COMFORT II.

In the second phase of OPERATION PROVIDE COMFORT, the military mission was providing security over a large area of northern Iraq and southeastern Turkey while nonprofit civilian organizations assumed the humanitarian aid distribution responsibilities.[10] The joint staff tasked to support the operation was responsible for the full range of logistics from aviation and vehicle maintenance, transportation, and supply, to base operating support including billeting, dining facilities, and subsistence activities.[11] The joint staff learned that logistics support consist of much more than delivering food, fuel, and ammunition, it includes understanding the relationships between different functions and knowing how and when to manipulate those activities to maximize support. Consolidating personnel expertise improved logistics capabilities; however, a full cadre of in-place seasoned troops will not be available at most deployed operations.[12] The expeditionary experiences from deployed personnel and need for integrated logistics training were also echoed by participants in field exercises. Colonel Michael F. Flannery, Commander 164th Support Group, U. S. Army Reserve reflected on his responsibilities and training during exercise Golden Bear 91,

> The 164th was assigned multifunctional logistics roles. The responsibilities included personnel services such as clothing and equipping soldiers, arming them, fueling, fixing, and repairing vehicles, moving assets, and protecting operations.... Accomplishing the additional logistics functions was difficult and required a broad understanding of almost all functions. [13]

According to Colonel Flannery, the two most important lessons learned from Golden Bear 91 exercise were the need for a standardized NTC multifunctional logistics scenario to disseminate integrated doctrine by hands-on experience, and additional security and force protection training for deployed personnel.[14] Combining the operational feedback from the field with the

understanding that combat arms leaders at all levels must understand the relationship between combat capability and combat support, the Army incorporated integrated logistics activities into NTC exercises.

Training as you Fight – Integrating Combat Logistics in Operational Training

The training requirement highlighted by Colonel Flannery combined with an emerging emphasis on the Army theater opening force module (TOFM) concept of integrated logistics infrastructure convinced the NTC Commanding General to develop an integrated combat logistics training program.[15] Combat Support (CS) and Combat Services Support (CSS) units are tasked to conduct reception, staging, onward movement, and integration, (ROSI); sustainment, and regeneration operations to enhance the combat commander's ability to build combat power and move forces for tactical advantage.[16] Units deploy to the NTC and exercise supporting the ROSI, sustaining and regenerating forces, redeploying a brigade, rolling up a logistics base and redeploying. To maximize training benefits, notional missions including resource shortfalls and other limitations are given to the units to further simulate the difficulties - "fog and friction" of integrated logistics wartime operations.[17] Based on demonstrated unit proficiency, NTC personnel can accelerate or reduce the tempo of operations adding realistic time constraints into planning and executing operations.

Benchmarking Army "doctrine to training" provides precedence for establishing integrated Air Force logistics training to more effectively support expeditionary forces. This inter-service comparison also supplies examples to bridge the gap between doctrine, strategy, and training, and establishes a framework for integrated logistics officer career development. The NTC "train as you fight" example provides a template for including logistics in combat exercises. Although Army training parallels Air Force logistics training deficiencies; Weapons School and Red Flag

legacies are prime examples of Air Force training programs driven by operational combat requirements.

Notes

[1] "Historical Overview of the Army Training and Doctrine Command", Chapter Two "Origins of TRADOC", 3-4; on-line, Internet, 4 March 200, available from http//www.tradco.monro.army.mil/historian/pubs/TRADOC25/chap2.htm.

[2] *ibid.*

[3] *ibid.*.

[4] Captain Michael T. Dandridge, "Is There a Logistics Corps in our Future?," *Army Logisticain*, (March-April 1997): 6-7.

[5] Captain Scott A. Vaughan USAF, "Learning From the Army Logistics Officer Training System," *Air Force Journal of Logistics* XXII, no. 2 (Summer 1998): 11-13.

[6] *ibid.*

[7] Brigadier General Charles S. Mahan Jr. USA, "Your Future as a Multifunctional Logistician," *Army Logistician*, (January-February 1995): 5-7.

[8] Colonel Roy E. Beauchamp USA, "Training as We Fight", *Army Logistician*, (July-August 1992): 12-13.

[9] *ibid.*

[10] Major John W. Collins Jr. USA, "Logistics Support for Operation Provide Comfort II," *Army Logistician*, (May-June 1992): 22-24.

[11] *ibid.*

[12] *ibid.*

[13] Colonel Michael F. Flannery Jr. USA, "Train Up to Multifunctional Logistics," *Army Logistician*, (January-February 1992): 34-37.

[14] *ibid.*

[15] Lieutenant Colonel William D. Trout USA, "Better Training for Theater Opening Force," *Army Logistician*, (November-December 1997): 20-21.

[16] *ibid.*

[17] Trout, 21.

Part 7

Appendix C: Applying the USAF Weapons School and Red Flag Templates

> In the late 1940s a group of veteran combat pilots were assembled in the Nevada desert to pass on lessons learned by themselves and fallen comrades to a new corps of fighter pilots. Highly skilled in aerial combat, *their expertise was earned the hard way – in the arena of combat by trail and error.* These self-taught experts were brought together for the singular purpose of passing on their expertise to others for use in future combat.[1]

Origins of the Air Corps Gunnery School and progression to the USAF Weapons School

The U.S. Army Air Corps recognized an operational requirement for more proficient aerial gunners well before the immediate needs of World War II. The Air Corps Gunnery School was established in June of 1941 to train and qualify aerial gunners for combat duty.[2] At that time, the most current Air Corps doctrine emphasized that unescorted bombers, protected only by their gunners, "would always get through" to the target and defeat any air enemy. Although the costly lessons learned over German skies would prove that theory wrong; training to support that doctrine was standardized in the Air Corps. Enlisted gunners gained experience shooting moving targets on railway cars in the Nevada desert *before they were sent into combat.*[3]

Established in 1949, the USAF Fighter Gunnery School trained instructors in all aspects of gunnery, rocketry, and dive-bombing. Faculty also developed methods and techniques for all related equipment and procedures focused on solving training problems in tactical units.[4] Designated as the USAF Fighter Weapons School in the 1950s, the program *evolved* from

producing gunnery experts to producing *technical experts* who would be leaders and top instructor pilots. Driven by feedback from operational squadrons, lessons learned on the battlefield, the expansion of more advanced threats, and developments in airpower doctrine, the course cirriculum expanded.[5] It was during this time that the school established a tailored syllabus for each aircraft and began pursuing operational research and development initiatives. Today, the Weapons School's focus is concentrated exclusively on training elite instructors to become the most qualified instructors, producing weapons systems experts both in the air and on the ground.[6] Students are taught everything about their weapons system and the most effective tactics in *employing* all the weapons for their aircraft, as well as advanced levels of all Air Force combat systems.[7] The origins, history, and mission of Weapons School reveal a striking similarity between the combat driven need to improve pilots' tactical training and the ACS doctrine and EAF force projection requirement for cross-functional logistics employment training. Highlighting the value Weapons Schools graduates add to the Air Force warfighting mission and their return on the training investment accentuates the potential for similar returns from integrated logistics school graduates.

The Value and Utility of Weapons School Training: Leveraging Tactical Expertise to Enhance Aerospace Power

As the Weapons school evolved in the 1950s, the Air Force also began to assess the foundational elements necessary for success in peacetime and wartime operations. Effective leadership emerged as the central factor in organizing, training, equipping, and employing aerospace power for successful operations in peace and in war.[8] Focusing on leadership as a force multiplier, the weapons school perpetuates leadership qualities typically found at the Colonel level by cultivating those attributes through challenging training.[9] Brigadier General

John Barry, 56th Fighter Wing Commander and Weapons School graduate, describes the focus of Weapons Schools training philosophy as,

> The practice of *applying lessons learned* is a key element of Weapons School training, each sortie focuses on in-flight leadership as students rapidly react, asses, and adjust to the challenges of the situation. We are not only building expert tacticians; we are also growing future leaders.[10]

The Weapons School graduates set the standard of excellence for Air Force combat units. These leaders return to their units as role models and the next generation of commanders, they are central to the quality, effectiveness, and readiness of combat forces.[11] The schools cirriculum teaches the graduates how to build a weapons training program in an operational squadron and provide academic and flying programs to the squadron members enhancing unit effectiveness and combat readiness.

The value of the Weapons School training in meeting the warfighting needs of aerospace power application and in preparing officers for senior leadership is compounded by the practical utility provided to the field. The school conducts intensive reviews of the most recent lessons learned from major conflicts or wars and conferences are hosted to determine what worked, what didn't, and what training can be improved.[12] Information gained from the conferences is incorporated in training and disseminated to units throughout the Air Force. Weapons school graduates apply their expertise in times of crisis as well; during Operations Desert Storm and Allied Force instructors deployed to serve as advisors on Commanders staffs. As Colonel Conroy observed, "You *want your experts there when you're fighting the battle*, the Weapons School believes that *people always perform to the highest level to which they have been trained*, and to that degree that they have learned from and applied lessons from the past." Colonel Bentley Rayburn, Weapons School Commandant 1993-1995, captured the contributions of the Weapons School saying, " We are known in terms of our value to the Air Force. The fighter world has

always known who we are and what we do."[13] Training tactical aviation experts and building future leaders satisfied one element of the combat aviation training requirement; however, the Air Force still needed realistic threat training to better prepare aircrews for combat challenges.

Origins of Red Flag: The Need for Comprehensive Aerial Combat Training

Red Flag was established in 1975 to more properly prepare aircrews for the challenges faced in actual combat. In *Warfighters: The Story of Weapons School and the 57th Wing*, Rick Llinares recounts the pressing need for aircrew combat training,

> Aircrew loses in Vietnam were the prime motivator in developing a comprehensive, realistic, threat simulation exercise. The majority of losses in Vietnam occurred within the first ten missions flown, the workload and unfamiliar environment overwhelmed the aircrews. Air Force studies clearly identified the fact that aircrew effectiveness improved significantly once they crossed the ten missions mark.[14]

This Vietnam loss rate stood in stark contrast to the twelve to one kill ratio achieved by the Air Force during the Korean conflict. The significant U.S. advantage was attribute to *training* and pilot skills in *employing* better air combat tactics.[15] Recognizing the correlation between training and combat effectiveness, the Air Force applied the historical evolution cycle depicted in the Caffrey History-to-Strategy model and revised training procedures. Red Flag exercises simulate the rigor of warfighting, flying against enemy aircraft exposes aircrews to the stresses of battle, better preparing them for their first combat missions. [16] Colonel Conroy notes, "the goal is to improve combat capability by reducing the learning curve in that critical initial phase and increasing the experience level through realistic training in an air, ground, and space threat training environment."[17] The Red Flag combat oriented training is integrated with joint and combined service components. A typical mission involves over 50 aircraft launching, employing, and recovering together.[18] Although the Red Flag training is a critical element of

aircrew training, it is not directly linked to the Weapons School cirriculum, Lieutenant Colonel Collins explains,

> Weapons School is not integrated with Red Flag, although we do interact with them. Their mission is training aircrews for their first combat experience not building expertise. Weapons School students have already honed their combat skills; our job is to make them better instructors and leaders. Both programs, Red Flag and Weapons School, serve the needs of the Air Force and enhance combat capability by providing realistic training.[19]

Red Flag Integrated Combat Training – A Model for Requirements Driven Logistics Training

Red Flag integrated air combat training aligns joint and Air Force aerospace power employment doctrine with training and ensures aircrews are trained in the tactics supporting that doctrine. Red Flag training is also congruent with established air operations strategy and tactics of "how we will fight" and provides an ideal model for addressing integrated logistics training deficiencies. The key factor in applying this template to logistics is a documented operational need for the training. As Colonel Tom Jeffcoat, former Weapons School Space Division Director emphasized during discussions addressing the need for integrated logistics training,

> You must avoid backing into a solution or creating a polemic. You must start with real world examples of the requirement for the training e.g., when wing X deployed to contingency X the standard aircraft utilization rate could not be supported do to logistics issues that a better trained logistics officer could have overcome.[20]

Primary data from interviewees and survey respondents' personal accounts along with secondary examination of authoritative doctrine and current logistics training programs provides evidence of the combat driven need for cross-functional training. Two additional accounts from logisticians deployed to Southwest Asia (SWA) further substantiate the training requirement. A lessons learned report from a Deputy Commander for Maintenance during the first 30 days of operations in Saudi Arabia indicated that forgotten equipment, lack of spare parts, and

interrupted resupply plagued initial F-16 operations.[21] Over seven years later, a strikingly similar report from an F-15 maintenance officer also deployed to Saudi Arabia indicated several factors including lack of sustainment capability drove the aircraft mission capable rate below 50 percent after only a month of combat sorties.[22]

Although the Red Flag exercises and Weapons School training are not connected, the opportunity exists to link integrated logistics expertise and tactical application exercises by combining the elements of both programs to meet expeditionary combat requirements. The development of combat TTPs to better prepare fighter pilots for war and the application of that training in realistic hands-on performance based evaluations such as Red Flag serve as conceptual models for the development of an integrated logistics officer course. The need to build integrated logistics experts and provide them realistic combat training is just as critical for the successful employment of the AEF operational concept as it was for tactical aviation in Vietnam. The recommendations of recently deployed F-117 maintenance officers captures the similarity in training requirements,

> A site for AEF exercises needs to be developed. These exercises are needed to train logisticians on deployment, beddown, sustainment, and redeployment. The operations community trains using Red Flag, Joint Forces Component Commander (JFACC) exercises and Command and Control exercises. The logistics community needs realistic training as well.[23]

Reducing the learning curve in initial combat operations is also vital in supporting expeditionary aerospace forces. A RAND feasibility study briefed at the 1998 Agile Logistics Users meeting supported the EAF 48-hour bombs-on-target concept of operations. The study noted that in order to meet the 48-hour mark, challenging logistics support timelines would have to be maintained with little room for error or delay.[24] Applying the lessons learned from combat aviation training to create combat logistics training provides an opportunity to leverage the lessons of history. Building agile logisticians from the aviation training template aligns with the

legacy and traditions of the Weapons School philosophy, "History teaches that combat capability improves with experience… the result of which are lower loss rates and higher effectiveness"[25]

Notes

[1] Rick Llinares and Chuck *Lloyd, Warfighters: The Story of the USAF Weapons School and the 57th Wing* (Atglen, Va.: Schiffer Publishing Ltd., 1996), 110.

[2] *ibid.*

[3] Colonel James Conroy, Commandant USAF Weapons School, interviewed by author, 21 January 2000.

[4] Llinares, 30.

[5] Conroy.

[6] Llinares, 99.

[7] *ibid.*

[8] Conroy.

[9] Llinares, 99.

[10] Brigadier General John Barry, Commander 56th Fighter Wing, Luke AFB, Arizona, interviewed by author 15 December 1999.

[11] Lieutenant Colonel Robert Condon, Deputy Commander USAF Weapons School, Nellis AFB, Nevada interviewed by author 21 January 2000.

[12] *ibid.*

[13] Llinares, 99.

[14] *ibid.*

[15] *ibid.*

[16] Barry.

[17] Conroy.

[18] Llinares, 8.

[19] Condon.

[20] Personal E-mail, Colonel Tom Jeffcoat USAF, Air Ground Operations Squadron (AGOS) Nellis AFB, Nev. 28 January 2000.

[21] Colonel Ralph J. Templin, "Desert Shield Lessons Learned – First 30 Days," report sent to HQ TAC, 27 Sep 1990, in "Deploying and Sustaining an F-117A Expeditionary Fighter Squadron: Why Agile Combat Support is Needed Now," *Air Force Journal of Logistics* XXII, no. 4 (Winter 1998): 32-36. Captain James D. Allen USAF and First Lieutenant M. Brian Bedesem USAF.

[22] Captain Ben Davis USAF, "War Stories, Great Expectations…," *The Exceptional Release*, no. 69 (Spring 1998).

[23] *ibid.*

[24] *ibid.*

[25] Llinare, 51.

Part 8

Appendix D: Logistics Officer Survey

Part 9

Appendix E: Logistics Officer Survey Data

Part 10

Appendix F: Spearman Rank-Order Correlation Coefficients

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